

State of Washington REPORT OF EXAMINATION FOR WATER RIGHT APPLICATION

PRIORITY DATE
January 3, 1995

WATER RIGHT NUMBER
G2-29174

MAILING ADDRESS
CITY OF RIDGEFIELD
230 PIONEER AVENUE
RIDGEFIELD WA 98642

SITE ADDRESS (IF DIFFERENT)

Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
400	GPM	483

Purpose

PURPOSE	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
Municipal, continuously	400		GPM	483		01/01 - 12/31

PUBLIC WATER SYSTEM INFORMATION

WATER SYSTEM ID	CONNECTIONS
72400V	

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Clark	Groundwater		27

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWP	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
Well			04N	01E	21	NW SE		

Place of Use (See Attached Map)

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

The place of use (POU) of this water right is the service area described in the most recent City of Ridgefield Water System Plan approved by the Washington State Department of Health, so long as the water system is and remains in compliance with the criteria in RCW 90.03.386(2). RCW 90.03.386 may have the effect of revising the place of use of this water right.

Proposed Works

The existing well, referred to as the Junction Well, is currently not in use because of high levels of iron and manganese. This well will be redeveloped and will provide treatment for iron and manganese. The well be equipped with a 400-gallon per minute (gpm) pump and will supply the Junction Reservoir, an existing 100,000 gallon above ground storage tank. The Junction Booster Station consists of three 1,000 gpm end suction centrifugal pumps and one 10 gpm vertical multi-stage pump. The Junction Booster Station provides water to the water system High Zone from the Junction Reservoir.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Begun	January 1, 2015	March 1, 2020

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Upon Request by Ecology
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm or cfs)

Provisions

Measurements, Monitoring, Metering and Reporting

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173.

WAC 173-173 describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Mitigation Performance

By February 1, 2013, the City shall submit a monitoring and maintenance plan for the habitat enhancement project (EF-20) that will ensure performance standards are met for a period of at least 10 years.

Proof of Appropriation

The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the permit. Elements of a proof

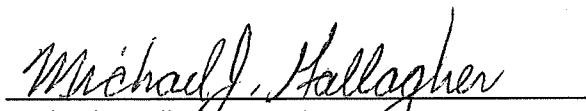
inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Findings of Facts

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose(s) of use are beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G2-29174 subject to existing rights and the provisions specified above.

Signed at Olympia, Washington, this 14th day of September 2012.


Michael J. Gallagher, Section Manager

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order.

File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.

- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.
- You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Mailing Addresses	Street Addresses
Pollution Control Hearings Board PO Box 40903 Olympia, WA 98504-0903	Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501
Department of Ecology Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608	Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503

For additional information visit the Environmental Hearings Office Website: <http://www.eho.wa.gov>. To find laws and agency rules visit the Washington State Legislature Website: <http://www1.leg.wa.gov/CodeReviser>.

BACKGROUND

The subject application was submitted to Ecology by the City of Ridgefield and assigned a priority date of January 3, 1995. The application is for appropriation of groundwater to provide additional supply the Ridgefield Water System, a Class A system (Washington State Department of Health [DOH] identification number 72400V). The most recent water system plan was prepared in 2005 by Gray & Osborne, Inc.

Attributes of Application

Table 1 Application Summary

<i>Name</i>	<i>City of Ridgefield</i>
Priority Date	1/3/1995
Instantaneous Rate	400 gpm
Annual Quantity	483 af/yr
Purpose(s) of Use	Municipal
Period of Use	Continuous use
Place(s) of Use	Area served by Ridgefield

Table 2 Proposed Point of Withdrawal

<i>Source Name</i>	<i>Parcel</i>	<i>WellTag</i>	<i>Twp</i>	<i>Rng</i>	<i>Sec</i>	<i>QQ Q</i>	<i>Latitude</i>	<i>Longitude</i>
Junction Well			04N	01E	21	NW SE		

Legal Requirements for Approval of Appropriation of Water

RCWs 90.03 and 90.44 authorizes the appropriation of public water for beneficial use and describes the process for obtaining water rights. Laws governing the water right permitting process are addressed in RCW 90.03.250 through 90.03.340 and RCW 90.44.050. In accordance with RCW 90.03.290, Ecology must make determinations on these four criteria in order to approve an application for water rights:

- Water must be available for appropriation.
- There must be no impairment of existing rights.
- The water use must be a beneficial use.
- Approving the application must not be detrimental to the public interest.

This report serves as the written findings of fact concerning all things investigated regarding Water Right Application Number G2-29174.

Public Notice

The applicant published a public notice for this project proposal in *The Daily News* of Cowlitz County once a week for two consecutive weeks beginning on April 14 and ending April 21, 1994. No protests or letters of concern in response to this notice.

State Environmental Policy Act (SEPA)

A SEPA determination evaluates if a proposed withdrawal will cause significant adverse environmental impacts. A SEPA threshold determination is required for:

- 1) Surface water applications for more than 1 cubic feet per second (cfs). For agricultural irrigation, the threshold increases to 50 cfs, if the project isn't receiving public subsidies.
- 2) Groundwater applications requesting more than 2,250 gpm.
- 3) Projects with several water right applications where the combined withdrawals meet the conditions listed above.
- 4) Projects subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA).
- 5) Applications that are part of several exempt actions that collectively trigger SEPA under WAC 197-11-305.

This application does not meet any of these conditions and is categorically exempt from SEPA.

INVESTIGATION

This investigation included, but was not limited to, research or review of:

- Records of water rights and well logs in the vicinity
- Topographic and local area maps
- Groundwater modeling performed by Golder Associates, Inc.
- City of Ridgefield Mitigation Proposal, 2012

Project Description

The City of Ridgefield is located in southwestern Washington approximately two miles east of the Columbia River and 25 miles north of Portland, Oregon. Rolling hills and ravines surround the City. Lake River borders Ridgefield to the west and the existing city limits extend past I-5 to the east. Gee Creek is the primary surface water body through the City's service area. Elevations range from a maximum of approximately 300 feet above mean sea level (msl) on the east side of I-5 to a minimum of 0 feet msl at Lake River.

The Junction Well is located approximately two miles east of the city of Ridgefield business district along SR-501. The well lies at an elevation of approximately 285 ft MSL within the East Fork Lewis River Subbasin of WRIA 27 and within the surface water drainage basin of Allen Creek. The well is located on land owned by the Port of Ridgefield and leased to the City of Ridgefield.

Table 2 shows the City's existing water rights.

Table 2

<i>Source</i>	<i>WR number</i>	<i>Instantaneous Withdrawal (gpm)</i>	<i>Annual Withdrawal (acre-feet) Additive</i>	<i>Annual Withdrawal (acre-feet) Non-Additive</i>
Well No. 1	018511	200	323	
Well No. 2	G2-20381	300	240	
Well No. 3	2449	150	180	
Well No. 5	G2-20379	200	119	42
Well No. 6	G2-20380	125	100	
Well No. 7	G2-27103	300		241
Well No. 8	G2-27104	300		241
Well No. 9	G2-27105	300		241
	TOTAL	1,875	962	

Proposed Use and Basis of Water Demand

Groundwater is requested for municipal supply used continuously year round. Bringing the Junction Well on line will help meet Ridgefield's projected water demand over the next 20 years. In 2003, the City of Ridgefield supplied water to serve 1,022 equivalent residential units (ERUs) based on an annual average consumption of 232 gallons per day (gpd) per ERU. By 2024 demand is projected to be 11,161 ERUs.

Hydrologic/Hydrogeologic Evaluation

General Area Hydrogeology

The regional geologic and hydrogeologic framework for Clark County was first developed by Mundorff (1964); additional regional hydrogeologic investigation and interpretation was performed by Swanson and others (1993). Detailed geologic mapping of the west-central portion of Clark County, including the Ridgefield, Saint Helens, and Battle Ground quadrangles, has been done by Everts (2004a, 2004b) and Howard (2002). Hydrostratigraphic cross sections of west-central Clark County were developed by Pacific Groundwater Group and presented in PGG (2003). Golder Associates (2007, 2008) developed detailed hydrostratigraphic cross sections and potentiometric surface maps of the Ridgefield area, focusing on the Junction Well vicinity, in support of the present application.

Ridgefield lies in the northern part of the Portland Basin, a northwest-southeast trending topographic and structural basin approximately 40 miles long and 20 miles wide. The basin is flanked by Eocene through Miocene volcanic and sedimentary bedrock. The deepest parts of the basin, near Vancouver, are filled by up to 1,800 ft of late Miocene and younger unconsolidated sediments primarily carried in from the east by the Columbia River.

The unconsolidated basin-fill sediments consist of layers of coarse-grained sand, gravel, and cobble deposits and layers of fine-grained silt and clay deposits. The coarse-grained deposits from the principal aquifers and the fine grained deposits act as aquitards or confining units which separate the aquifers from one another. Groundwater in the shallow, unconfined aquifers is typically recharged via infiltration of precipitation and discharges to smaller surface-water tributaries such as Gee Creek. Groundwater in the deeper, confined systems is recharged via downward leakage from overlying aquifers and typically discharges to the Columbia River or larger tributaries such as the East Fork Lewis River.

Understanding of the hydrogeology of the Portland Basin has been evolving over the past 40 years and terminology and stratigraphic relationships are sometimes inconsistent between workers. For the purposes of this report, the stratigraphic framework of the most recent site-specific study (Golder Associates 2007, 2008) is presented. Based on this work, the Ridgefield area is underlain, from the surface downward, by the following hydrostratigraphic units:

- *Pleistocene Alluvial Deposits* - Undifferentiated sediments associated with flood deposits of the Columbia River. Well logs indicate that the Pleistocene deposits are predominantly unconsolidated with thicknesses that generally range between 50 and 200 feet in the surrounding area, and are composed of sediments ranging from boulders to clay. At the Junction Well, the Pleistocene Alluvial Deposits are approximately 50 feet thick.
- *Upper Troutdale Aquifer* - This aquifer is approximately 100 feet thick at the Junction Well and is largely composed of sand and gravel. Zones of silt and clay and partially-cemented coarse sands and gravels noted in local well logs limit the transmissivity of this unit. The aquifer supplies many of the local domestic wells in the area, and typically has well yields less than 100 gpm.
- *Upper Confining Unit* - Composed of low-permeability sediments of silt and clay, this unit typically underlies the Upper Troutdale Aquifer. However, based on the available well logs, the Upper Confining Unit appears to be discontinuous or absent in the vicinity of the Junction Well.
- *Lower Troutdale Aquifer* - Composed predominately of sand with interlayers of medium sand and silt, and is approximately 50 feet thick at the Junction Well. The Lower Troutdale Aquifer is typically confined and overlain by the Upper Confining Unit; however, with the apparent absence of the Upper Confining Unit in the vicinity of the Junction Well, the Lower Troutdale Aquifer is directly overlain by the Upper Troutdale Aquifer.
- *Lower Confining Unit* - Composed predominantly of clay with some sand and gravel. In the vicinity of the Junction Well, this confining unit is approximately 50 to 70 feet thick. Well logs southeast and southwest of the Junction Well indicate that the Lower Confining Unit is relatively uniform in thickness and is present over a broad area including in the vicinity of Gee Creek and the Junction Well.
- *Sand and Gravel Aquifer (SGA)* - This unit is confined and is approximately 160 feet thick at the Junction Well. The top contact of the SGA is found at a depth of 300 feet below ground surface (bgs), or approximate elevation -67 feet msl. It is primarily composed of sand, sandy gravel, and silt. This unit also contains some cemented sand and gravel layers, and silt and clay interbeds. The SGA exists

over a broad area of the Portland Basin. Relatively few wells tap the SGA and groundwater development within the SGA is primarily by public water-supply systems.

- *Pliocene and Miocene Undifferentiated Sediments* - Fine-grained sedimentary deposits primarily composed of fine- to medium-grained sand, silt and clay with small lenses of sand.
- *Miocene Basalt Bedrock* - Bedrock underlying the sedimentary deposits in this area is composed of basalt of the Columbia River Basalt Group.

Geologic mapping by Evarts (2004a), shows the SGA to have been incised by streams in the lower reaches of the study area near base-level elevations that discharge to the tidally influenced areas of the lower portions of the East Fork Lewis River, Lewis River, and Lake River systems. The SGA is mapped intermittently along some portions of the East Fork Lewis River floodplain, the lower reaches of Allen Canyon Creek upstream of Mud Lake, the lower reaches of McCormick Creek upstream of its confluence with the East Fork Lewis River, and along slopes east of Lancaster Lake near the Lake River system.

The Junction Well taps the Sand and Gravel Aquifer. The driller's log for this well indicates that it penetrates clays of the Pleistocene Alluvial Deposits to a depth of between 45 and 62 feet bgs, sands and gravels of the Upper Troutdale Aquifer to 171 feet bgs, sands of the Lower Troutdale Aquifer to between 225 and 230 feet bgs, clays of the Lower Confining Unit to a depth of between 285 and 300 feet bgs, and sands with some gravel of the SGA to 458 feet bgs. The well is gravel packed from 306 to 458 feet bgs and screened from approximately 326 to 342 feet bgs and from 438 to 443 feet bgs.

Impairment Considerations

Impacts to Area Groundwater Users

Ecology's Water Right Tracking System (WRTS) database was queried to identify senior groundwater rights in the vicinity of the Junction Well. Cross referencing these records with Ecology's Well Log Database and the well inventory presented in Golder (2008) indicates that the nearest senior certificated groundwater rights associated with wells tapping the SGA are G2-28630 and G2-28956. These are located about 1 mile northeast and 1.4 miles east of the Junction Well, respectively and are for deep production wells owned by CPU. The characteristics of the CPU water rights are summarized in Table 3.

Table 3. Senior Groundwater Rights in the Vicinity of the Junction Well

File #	Owner	Priority Date	Purpose	Qi (gpm)	Qa (acre-foot/year)	TRS
G2-28630	Clark Public Utilities	8/13/1986	Domestic, multiple	500	403	04N01E22
G2-28956	Clark Public Utilities	8/13/1986	Municipal	700	565	04N01E22

Other certificated water rights associated with SGA wells are G2-27103CWRIS, G2-27104CWRIS, and G2-27105CWRIS; these rights are for City of Ridgefield production wells which are located about 0.9 miles west of the Junction Well. In addition, there are 151 records of groundwater claims within about 1.5 miles of the Junction Well.

There are 229 well logs in Ecology's Well Log Database within about 1.5 miles of the Junction well. Most of these wells tap shallow aquifers above the Lower Confining Unit. The nearest well tapping the SGA appears to be the Ellertson Well (the owner shown on the well log is N. Fiorito Co. Inc.); this well is located about 0.5 miles east-northeast of the Junction Well.

Upward propagation of effects from pumping the SGA are limited by the overlying Lower Confining Unit and no interference to wells in aquifers above this unit (the Pleistocene Alluvial Deposits and the Upper Troutdale Aquifer) is expected.

Because of the high transmissivity of the SGA and the distance of other SGA wells to the Junction well, interference to other SGA wells from pumping are expected to be observable but insignificant. This conclusion is supported by the limited hydraulic response of the Ellertson Well (~0.5 feet) during the pumping test. Even under long-term pumping of the Junction Well (one year continuously at 400 gpm), Theis analyses indicate that interference to existing wells between 0.5 and 1 mile of the Junction Well would be less than 3.5 feet. The nearest well that is in use is located approximately 0.9 miles to the west of the Junction Well.

Impacts to Surface Waters and Instream Flows

Initial modeling indicated relatively minor effects to area streams. When the draft ROE was posted on the internet, a comment was received that called into question the accuracy of the modeling. Golder Associates reassessed the work and, using a different model (Deep Aquifer Yield Model, CH2MHILL, 2001), determined that the impact of the pumping would have an impact to the lower reaches of the East Fork Lewis River between a range of 40 and 160 gpm, with an overall average of 113 gpm or 0.25 cfs (Golder 2009). This is in line with the model results conducted for Clark Public Utilities nearby Pioneer wellfield.

Ecology adopted WAC 173-527, the instream flow rule for the Lewis River watershed in January 2009. The East Fork Lewis River subbasin is closed to new withdrawals of groundwater that would affect flow in the river, except under certain conditions listed in WAC 173-527-080. Instream flows established under WAC 173-527 constitute water rights whose priority date is the effective date of the regulation.

Mitigation proposal

While WAC 173-527 closed all streams in the WRIA to further consumptive appropriation, there are reserves of water set aside for domestic uses within some of the subbasins, including the East Fork Lewis River. There is a reservation allowing for a net streamflow depletion of 2.2 cfs on the East Fork Lewis River for municipal supply for Clark Public Utility, the City of Battleground, and the City of Ridgefield.

To access the reserves, the entities are to bring a mitigation plan to the table that includes water placed in trust equal to half the predicted streamflow depletion, and habitat mitigation based on calculations in

the WRIA 27/28 Mitigation Guidance document. The 50% water requirement can be waived under certain conditions.

After several years of searching for suitable water rights to purchase without avail, the city began discussions with the WRIA Planning Unit for a waiver of the water replacement requirement and to allow 100% habitat related mitigation. The City formalized this proposal in their March 17, 2012 mitigation proposal which was submitted to the Lower Columbia Fish Recovery Board for discussion at the Planning Unit. The Planning Unit ultimately decides whether the mitigation plan is adequate and gives a recommendation to Ecology.

Highlights of the plan include:

- 100% habitat related mitigation
- 0.25 cfs will be debited from the 2.2 cfs reservation on the East Fork Lewis River
- Ridgefield will fully fund the Upper Daybreak Stream Habitat Enhancement Project (EF-20)

Details of the plan can be found in the Mitigation Proposal, Appendix A of this Report.

In a letter to Ecology dated June 14, 2012, the Planning Unit supported the City's mitigation plan and issuance of the water right permit. The Planning Unit also recommended that the City develop a monitoring and maintenance plan to ensure performance of the mitigation for a ten year lifespan. This has been included as a provision of this water right.

Public Interest Considerations

Approving G2-29174 is not detrimental to the public interest.

FINDINGS AND CONCLUSIONS

This application requests water for municipal supply. Based on my evaluation, I find that:

- The use of water for Municipal Supply is a beneficial use.
- Water is available in sufficient quantities to provide a reliable source for municipal supply, based on well and pump information. Water is legally available through the reservation established in WAC 173-527 and the mitigation plan proposed by the City.
- The issuance of this water right will not impair any senior water right holders.
- Approving this appropriation is not detrimental to the public interest.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and in the limitations listed below and subject to the provisions listed above.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

- 400 gpm
- 485 ac-ft per year
- Municipal Supply

Point of Withdrawal:

- NW¼ SE¼, Section 21, Township 4 North, Range 1 E.W.M.

Place of Use:

- Area served by the City of Ridgefield.

Phil Crane

Phil Crane

9/14/2012

Date

If you need this publication in an alternate format, please call Water Resources Program at (360) 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

References:

Evarts, R.C., 2004a, *Geologic Map of the Ridgefield Quadrangle, Clark and Cowlitz Counties, Washington*: U.S. Geological Survey Scientific Investigations Map 2844, scale 1:24,000

Evarts, R.C., 2004b, *Geologic Map of the Saint Helens Quadrangle, Columbia County, Oregon and Clark and Cowlitz Counties, Washington*: U.S. Geological Survey Scientific Investigations Map 2834, scale 1:24,000

Golder Associates, Inc., 2007, *Estimates of Streamflow Reduction in Gee Creek from Operating the Junction Well*: Technical Memorandum submitted to Washington State Department of Ecology, February 15, 2007

Golder Associates, Inc., 2008, *Junction Well Hydrogeologic Analysis*: Prepared for Gray & Osborne, February 5, 2008

Golder Associates, Inc., 2009, Technical Memorandum, *Re-evaluation of potential stream impacts from the City of Ridgefield Junction Well*, February 12, 2009

Gray & Osborne, Inc., 2005, *City of Ridgefield Water System Plan Update*, October 2005

Gray & Osborn, Inc., 2008, *Junction Well Impact Analysis and Mitigation Plan*: Memorandum to Washington State Department of Ecology, May 7, 2008.

Howard, K.A., 2002, *Geologic map of the Battle Ground 7.5-minute quadrangle, Clark County, Washington*: U.S. Geological Survey Miscellaneous Field Studies Map MF-2395, scale 1:24,000, with 18-p. pamphlet

Mundorff, M.J., 1964, *Geology and ground-water conditions of Clark County, Washington, with a description of a major alluvial aquifer along the Columbia River*: U.S. Geological Survey Water-Supply Paper 1600, 268 p., with geologic map at scale 1:48,000

Pacific Groundwater Group (PGG), 2003, *Groundwater/Surface-Water Relationships East Fork Lewis River Watershed*: Technical Memorandum 10 (Task 8a), WRIA 27/28 Watershed Plan, prepared for Lower Columbia Fish Recovery Board, December 2003

Swanson, R.D., McFarland, W.D., Gonthier, J.B., and others, 1993, *A description of hydrogeologic units in the Portland basin, Oregon and Washington*: U.S. Geological Survey Water-Resources Investigations Report 90-4196